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Indian Standard
**SPECIFICATION FOR
CAST SKEW BOLLARDS**

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Indian Standard

SPECIFICATION FOR CAST SKEW BOLLARDS

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Indian Standard

SPECIFICATION FOR CAST SKEW BOLLARDS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 29 July 1969, after the draft finalized by the Shipbuilding Sectional Committee had been approved by the Mechanical Engineering Division Council.

0.2 Bollards form a part of the mooring outfit required on board ships. The nominal size of cast bollard is based on the admissible breaking load of ropes specified by the competent authority under whose rules the vessel is constructed. This type of bollard is commonly used in inland vessels, harbour crafts and coastal vessels.

0.3 In the preparation of this standard, considerable assistance has been derived from JIS F 2001-1955 'Bollards' issued by Japanese Industrial Standards Committee.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS: 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard specifies the material and dimensions for cast skew bollards.

2. TERMINOLOGY

2.0 For the purpose of this standard, the following definition shall apply.

2.1 Nominal Diameter — The nominal diameter of bollards is the outside diameter of the bollard barrel in millimetres.

*Rules for rounding off numerical values (revised).

3. MATERIAL

3.1 Cast bollards shall either be made of cast iron or cast steel. Iron castings shall conform to Grade 25 of IS:210-1962* and steel castings shall conform to IS:2985-1964† or IS:1030-1962‡.

4. DIMENSIONS

4.1 The shape and dimensions of cast iron (CI) and cast steel (CS) skew bollards shall be as given in Fig. 1 (*see* page 6) read with Table 1 (*see* page 7).

4.2 The height H may exceed the value given in the table by one-fifth of the nominal diameter of the bollard, unless otherwise stated by the purchaser.

4.3 The thickness of the material in no case shall be less than the specified value shown in Table 1.

4.4 The finished weight of the cast bollard shall not be less than the calculated weight shown in Table 1.

5. TOLERANCES

5.1 The tolerance in millimetres on dimensions of grey cast iron bollards shall conform to 'Indian Standard deviations for untoleranced dimensions of grey iron castings' (*under preparation*).

5.2 The tolerance in millimetres on dimensions of cast steel bollards shall conform to IS:4897-1968§.

5.3 The tolerances on the dimensions of machined parts, where they have not been specified in this standard, shall be of coarse grade specified in IS:2102-1962||.

5.4 No negative tolerance shall be permitted on the dimensions t and t_2 .

5.5 The tolerance on holes in the base of the bollard for securing by metric bolts shall be according to coarse series of IS:1821-1967¶.

*Specification for grey iron castings (*revised*).

†Specification for steel castings for ship's structure.

‡Specification for steel castings for general engineering purposes (*revised*).

§Deviations for untoleranced dimensions and weight of steel castings.

||Recommendations for machining deviations for dimensions without specified tolerances.

¶Dimensions for clearance holes for metric bolts.

5.6 The dimensions for countersinks shall conform to Type A of IS : 3406-1966*.

6. FINISH

6.1 The barrel surface of the bollard shall be finished smooth.

7. DESIGNATION

7.1 Cast skew bollards shall be designated by its material, name, nominal diameter and number of this standard. The letters 'CI' and 'CS' shall indicate cast iron and cast steel respectively.

Example:

Cast skew bollards having a nominal diameter of 200 mm made of cast iron shall be designated as:

CI Skew Bollard 200 IS : 5240

8. MARKING

8.1 Cast skew bollards shall be marked with nominal diameter and manufacturer's other identification marks.

8.1.1 The cast skew bollards may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act, and the Rules and Regulations made thereunder. Presence of this mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard, under a well-defined system of inspection, testing and quality control during production. This system, which is devised and supervised by ISI and operated by the producer, has the further safeguard that the products as actually marketed are continuously checked by ISI for conformity to the standard. Details of conditions, under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

*Dimensions for countersinks and counterbores.

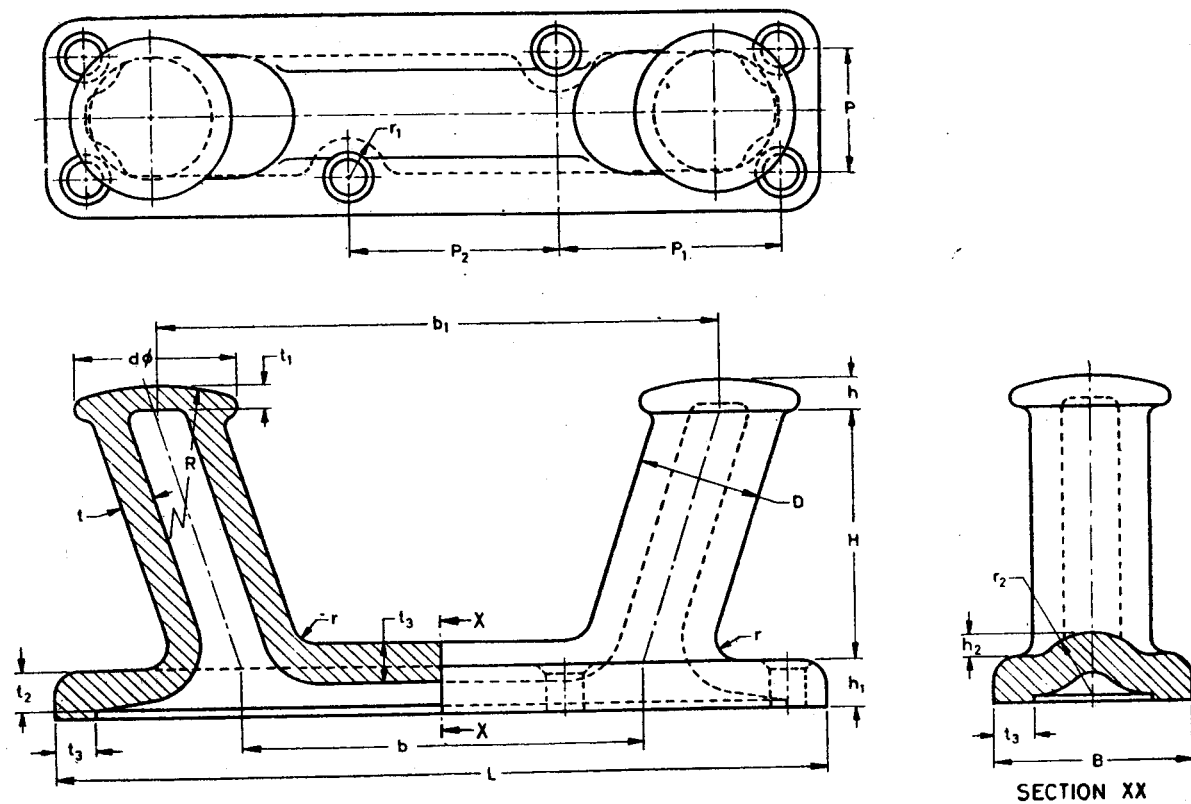


FIG. 1 CAST SKEW BOLLARD

TABLE 1 CAST SKEW BOLLARD

(Clauses 4.1, 4.3 and 4.4)

All dimensions in millimetres.

NOMINAL DIA	TONNES FORCE	CALCULATED WEIGHT, kg (APPROXIMATE)	BARREL												BASE												FIXING ARRANGEMENT					NOMINAL SIZE OF ROPE			
			D	H	R	b	b ₁	d	h	r	t		t ₁		B	L	h	h ₁	r ₁	r ₂	t ₂		t ₃	Nominal Dia	No.	P	P ₁	P ₂	*Galvanized Wire Rope (6 × 12)	*Galvanized Wire Rope (6 × 24)	†Manila Rope Circumference	‡Sisal Rope Circumference			
											CI	CS	CI	CS							CI	CS													
75	3.5	20.6	75	155	160	250	350	100	20	15	20	14	14	12	125	480	30	15	25	40	25	18	25	M20	6	75	140	130	11	9	127	127			
100	5.0	39.3	100	195	270	320	420	135	26	20	25	15	17	13	160	570	35	20	30	50	30	20	25	M20	6	100	180	150	14	11	127	127			
125	8.0	61.6	125	240	450	400	520	170	32	25	25	15	17	13	195	680	35	20	35	50	30	20	30	M22	6	125	220	170	16	14	140	152			
150	12.0	99	150	280	570	470	610	200	38	30	30	16	20	14	230	790	40	25	40	60	35	22	35	M22	6	150	260	190	20	18	178	178			
175	16.0	135	175	320	670	550	730	230	45	35	30	16	20	14	265	900	40	25	45	60	35	22	40	M24	6	175	300	210	24	20	203	229			
200	20.0	207	200	350	770	620	820	260	52	40	35	17	25	15	300	1 020	50	35	50	75	40	24	45	M24	6	200	340	240	26	22	229	254			

NOTE — The permissible stress for each size of bollard is based on the minimum breaking strength of wire rope of 6 × 12 or 6 × 24. The greater value of the two is indicated in the Table according to IS : 2581-1968*.

CI — Cast Iron

CS — Cast Steel

*See IS : 2581-1968 Specification for round strand galvanized steel wire ropes for shipping purposes (first revision).

†See IS : 1086-1961 Specification for cable-laid manila rope (revised).

‡See IS : 1372-1958 Specification for cable-laid sisal rope.

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